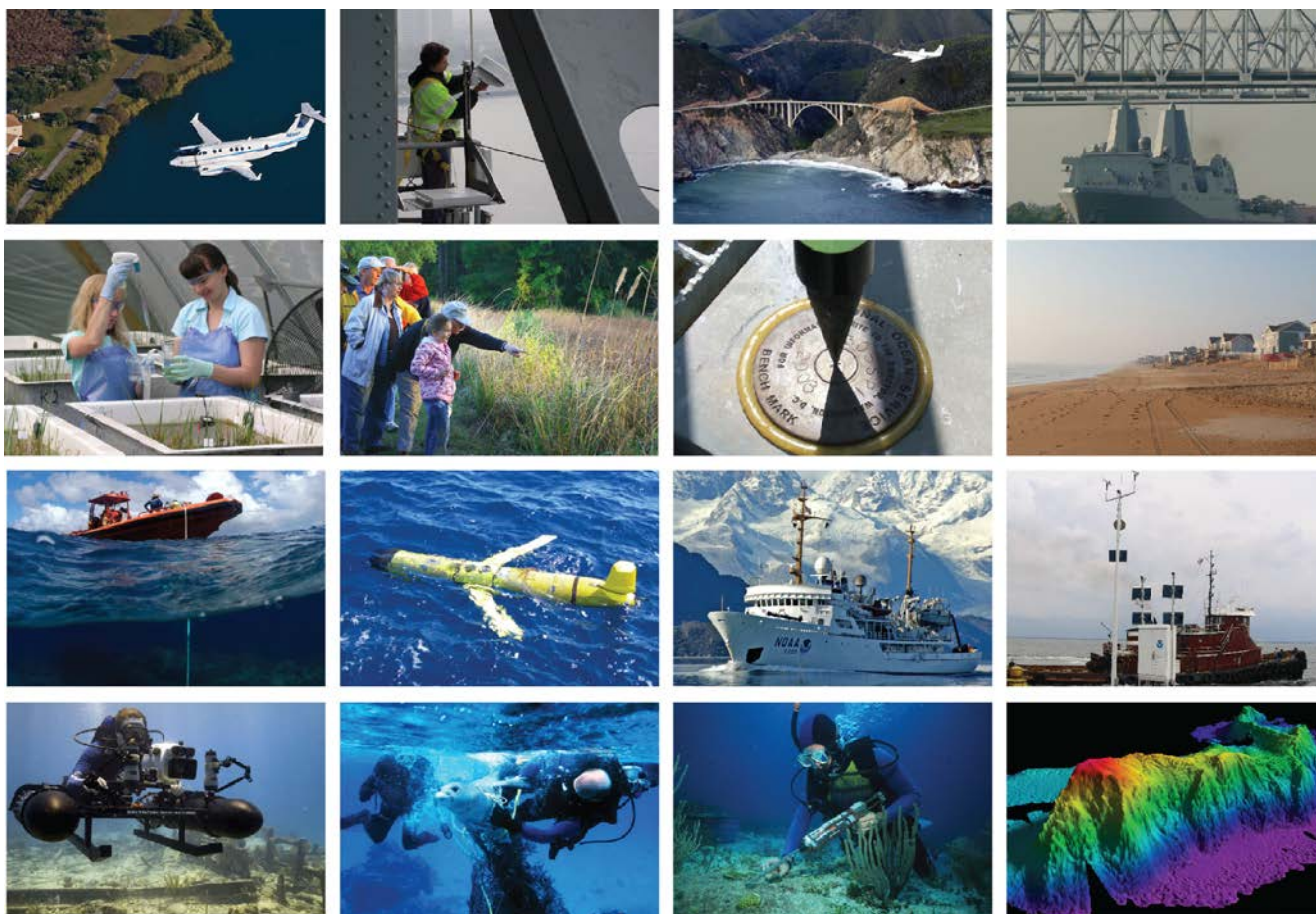


NOS Priorities ROADMAP

A guide for advancing National Ocean Service priorities over the next three to five years.

May, 2014



A LETTER FROM THE NATIONAL OCEAN SERVICE LEADERS TO ALL NOS STAFF

May, 2014

The work we carry out every day is vital to our country's safety and prosperity. Together, we are the National Ocean Service (NOS). We build science-based products and services that prepare and position America's coastal communities, economies, and ecosystems for a future of economic growth and environmental change. **Each one of you is an integral part of this.**

We work in a very dynamic and changing environment that requires unique and innovative tools, technologies, and services to address many of the coastal and ocean challenges we face. It is an exciting time and we are experiencing increasing possibilities when it comes to technology and communication. These circumstances present a unique opportunity for us as an agency to improve. In recent years, we have increasingly refocused our resources toward products and services that enhance connections across our mission areas. It is these connections that allow us to maximize our potential and increase efficiency.

Three **priorities** guide our efforts:

- Coastal resilience: preparedness, response, and recovery
- Coastal intelligence
- Place-based conservation

This document, the NOS Roadmap, is the guide for advancing these priorities over the next three to five years. It is not meant to be an annual operating plan tracking all the activities of NOS, but rather describe the approach we are collectively taking to better leverage resources and promote coordinated activities that take advantage of the diversity of the organization.

This Roadmap will inform our day-to-day planning and implementation efforts, including identifying milestones and writing performance plans. As you read the document, we invite you to consider ways your own activities support specific actions.

Thank you,



Holly A. Bamford, Ph.D.
Assistant Administrator for Ocean Services and
Coastal Zone Management, National Ocean Service (NOS)



Zdenka S. Willis
Director, U.S. Integrated Ocean Observing System
Program (IOOS®)



W. Russell Callender, Ph.D.
Deputy Assistant Administrator for Ocean Services and
Coastal Zone Management, National Ocean Service




Mary C. Erickson
Director, National Centers for Coastal Ocean Science
(NCCOS)



Christopher C. Cartwright
Chief Financial Officer



David G. Westerholm
Director, Office of Response and Restoration (ORR)



Rear Admiral Gerd F. Glang
Director, Office of Coast Survey (OCS)



Margaret A. Davidson
Acting Director, Office of Ocean and Coastal
Resource Management (OCRM)*



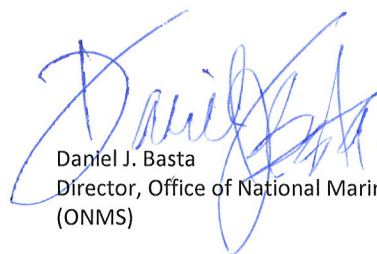
Juliana P. Blackwell
Director, National Geodetic Survey (NGS)



Jeffrey L. Payne, Ph.D.
Acting Director, NOAA Coastal Services Center
(CSC)*



Richard F. Edwing
Director, Center for Operational Oceanographic
Products and Services (CO-OPS)



Daniel J. Basta
Director, Office of National Marine Sanctuaries
(ONMS)

**NOAA Coastal Services Center and the Office of Ocean and Coastal Resource Management will be coordinating activities related to the NOS Roadmap as if they are a single office referenced as "OCM."*

INTRODUCTION

In the United States, almost 40 percent of the country's population lives in coastal shoreline counties. These counties contribute \$6.6 trillion, or just under half of the country's gross domestic product, to the U.S. economy. The health of our coasts is inextricably linked to the health of our nation's economy. Today, our coasts and coastal communities² are faced with environmental shifts such as climate change, sea level rise, and the increasingly significant impacts of catastrophic events. This makes the already challenging task of safeguarding people and infrastructure, facilitating commerce and managing coastal resources even more complex.

What does the future hold?



Higher intensity coastal storms. Storms like Sandy may be more of the norm. In 2013, there were seven extreme weather and climate events that each caused more than \$1 billion in damage.



Changing sea levels and coastal flooding. Changing sea levels and coastal flooding are likely to increase the challenges that many coastal communities already face.



Increased offshore development and coastal development. If current population trends continue, the U.S. coastal population will grow by another 10 million to nearly 134 million people by 2020, an eight percent increase over the 2010 Census.



Increasing demand on natural areas and ocean resources. Population along the coasts continues to grow at the same time that there is higher demand for healthy places for tourism and recreation, and food from fishing and aquaculture.



Increased demands on our marine transportation system. U.S. commercial ports directly support more than 13 million jobs. The demand for safe, effective, and resilient marine infrastructure and transportation continues to grow.

What does this mean for the National Ocean Service?

Aside from NOS, no single entity can provide the services and tools to help America address these challenges. NOS helps people and places prepare for, respond to, and recover from coastal disasters. NOS provides communities with data, observations, modeling, tools, and training to understand the local impacts of climate change, sea level change and coastal flooding, extreme natural events, and changing ecosystem conditions. As our coastal population continues to grow, NOS must ensure our nation's unique marine habitats and maritime history are conserved today and for generations to come. Maritime commerce, both along current navigation lanes and new ones opening in the Arctic, will require decision support tools, accurate charts, positioning tools, observations, and science to support response to oil spills and other hazards.

To address these challenges, the National Ocean Service is dedicated to advancing the following priorities:

- Coastal resilience: preparedness, response, and recovery
- Coastal intelligence
- Place-based conservation

The NOS Roadmap Supports NOAA's Priorities and the Department of Commerce Strategic Plan

In March 2014, the Department of Commerce released its Strategic Plan for fiscal years 2014 to 2018. NOS contributes to all five goals identified in the plan, with its primary activities falling into the Environment Goal to ensure communities and businesses have the necessary information, products, and services to prepare for and prosper in a changing environment. NOS plays a key role in objectives to strengthen the resilience of communities and foster health and sustainable marine resources, habitats and ecosystems.

In April 2014, NOAA identified four priorities to guide the agency from 2014 to 2016. As a Line Office within NOAA, NOS contributes to all four with a key role in the priority to make communities more resilient. Further, NOS's coastal intelligence capabilities support NOAA's position as America's environmental intelligence agency.

The following figure shows the alignment of NOS with the Department of Commerce and NOAA.



About the NOS Roadmap

The NOS Roadmap is the guide for advancing NOS's priorities over the next three to five years. The Roadmap includes integrated outcomes, strategies and actions that NOS will take to advance the priorities. The Roadmap complements NOS's annual operating plan and milestones but it is not intended to serve as an exhaustive plan of all NOS activities. NOS has a rich diversity of programs, tools and expertise. Each of our Program Offices is highly successful carrying out their respective missions. The Roadmap describes an approach that NOS is taking to better leverage resources and promote coordinated activities that take advantage of the diversity of the organization. While this Roadmap focuses on NOS actions, NOS fully recognizes that successfully advancing these priorities requires close collaboration across NOAA, federal and state agencies, non-profit organizations, industry, and academia.

COASTAL RESILIENCE: PREPAREDNESS, RESPONSE, AND RECOVERY

NOS recognizes that immediate and potentially life-threatening events such as hurricanes as well as long-term environmental impacts from climate change are very real challenges to sustaining healthy coastal communities and ecosystems. NOS also recognizes that these risks are likely increasing with the potential for a higher frequency of major storm events combined with enhanced risks of greater coastal impacts due to sea-level rise and coastal erosion. Achieving resilience⁴ requires a well thought out process of threat and vulnerability identification, planning, response actions, and recovery activities. NOS has learned from events such as the Deepwater Horizon Oil Spill, Hurricanes Katrina and Sandy and the effects of the Japanese earth quake, that our capacity to respond is often tested with respect to staffing and coordination. There is a need for enhanced coordination and better incident pre-planning to conduct an organized and effective response. Establishing all-hazards response capabilities for NOS will require additional investment in personnel, staff time, and training, but the outcome will be a more effective capacity to respond.

Lessons learned from major events also include the importance of advanced planning for long-term resilience. The range of NOS authorities and capabilities in coastal and ocean science, navigation, observation, positioning, resource management, habitat conservation, decision support, technical assistance, and training provide a powerful combination to enable communities to advance their resilience goals. NOS is skilled at identifying risks and vulnerabilities and working with decision makers to apply sustainable solutions that increase resilience to the impacts of climate change, extreme weather, coastal inundation, oil and chemical spills, and other hazards and environmental stressors.

OUTCOME

R1 NOS has the capability to respond to and manage two simultaneous significant incidents⁵ or one major event³.

STRATEGY [Lead: ORR]

R1.1 Develop and implement comprehensive training for all roles required within the preparedness-to-resilience all-hazards¹ continuum, both internally and with external partners to improve understanding of, and ability to interact with, federal structures and processes in place to support response and recovery.

ACTIONS	TIMELINE	NOS PROGRAMS
Clarify and define existing NOS roles and capabilities relative to all-hazards preparedness, response, recovery and resilience, and identify the respective roles and capabilities of key internal NOAA and external partners. Capture information in a regularly updated, on-line all-hazards directory.	FY 14-15, and regularly updated thereafter	Lead: ORR, OCM Support: All NOS Program Offices
Assess exiting training and establish clear training requirements for staff and key partners engaged in preparedness, response, recovery and resilience activities.	FY 14-15	Lead: ORR, OCM Support: All NOS Program Offices
Build all-hazards responsibilities and training requirements into	FY 15	All NOS Program Offices

individual performance plans for all relevant staff.		
Designate and train an NOS Incident Management Team, per the NOAA Concept of Operations (CONOPS), to manage emergency events and disaster recovery activities in partnership with NOAA Homeland Security Program Office (HSPO), under the established Incident Command System (ICS), and National Disaster Recovery Framework (NRDF).	FY 15	Lead: OCM, ORR, NOS HQ
Conduct/complete necessary training as specified in the training requirements in the second action above, and track progress toward achievement of full NOS training requirements.	FY 14-16, and ongoing thereafter	All NOS Program Offices

STRATEGY [Lead: ORR]

R1.2 Develop and implement cross-NOS preparedness drills and exercises coupled with a formal post-incident review process to enhance NOS' response and recovery posture for future all-hazards events.

ACTIONS	TIMELINE	NOS PROGRAMS
Develop an on-line calendar of existing drills and exercises in which NOS/NOAA staff and relevant external partners could participate to improve preparedness for response and recovery actions.	FY 14-15	Lead: ORR, OCM
Organize and conduct regular NOS all-hazards exercises and drills of varying scope and scale to improve response and recovery preparedness on specific hazards, sectors, and/or geographies. Ensure that drills and exercises incorporate a range of partners and places, and emerging scientific understanding and technical applications, and include NOS focus areas (e.g., ONMS, National Estuarine Research Reserves (NERRS), Disaster Response Center (DRC), ports).	FY 15 and regularly thereafter	Lead: ORR, OCM OCS, ONMS Support: All NOS Program Offices
Establish a formal NOS-wide after-action incident review process ("hotwash") to be done following all significant all-hazards events (or individual phases of large events over a long period) to evaluate organizational performance, document lessons learned, and enhance future response and recovery preparedness. Coordinate and communicate activities and/or results, as appropriate, with relevant national preparedness goal frameworks at the interagency level.	FY 14-15, and for all relevant incidents thereafter	Lead: ORR, OCM Support: All NOS Program Offices
Establish a standing cross-NOS all-hazards working group to serve as the primary POCs for coordination of NOS pre-incident preparedness and post-incident evaluation.	FY 14	Lead: ORR, OCM Support: All NOS Program Offices

OUTCOME

R2 Coastal communities apply relevant criteria and standards to enhance preparedness and recovery.

STRATEGY [Lead: OCM]

R2.1 Work with key partners to improve community understanding, consideration and adaptation to coastal hazard and climate risks, vulnerabilities and potential impacts, including efforts to develop standards for and indicators of community resilience.

ACTIONS	TIMELINE	NOS PROGRAMS
Define NOS role in preparedness and recovery and ensure appropriate connections to key interagency efforts such as the NRDF; National Mitigation Framework; National Response Framework; and National Institute of Standards and Technology (NIST) efforts to develop a disaster resilience framework on measurement science for sustainable construction and manufacturing.	FY 14	Lead: OCM, ORR
Inventory and synthesize existing federal and non-federal efforts to develop criteria, standards for, and/or indicators of resilience (Federal Emergency Management Agency (FEMA); United States Geological Survey (USGS); Sea Grant; Department of Homeland Security (DHS); University of North Carolina Natural Hazards Center, private sector).	FY 14-15	Lead: OCM, ORR Support: All NOS Program Offices that support all-hazards
Develop tools, products and services that will help practitioners at the regional, state and community levels understand and apply the various standards and indicators that define high-quality disaster preparedness and recovery for a post-disaster community.	FY 14-16	Lead: OCM, ORR Support: All NOS Program Offices that support all-hazards
Identify community and/or sector-oriented pilot projects to test applicability and usefulness of available criteria, standards or indicators. Consider a variety of community attributes, including non-impacted communities, as well as communities that have undergone recovery from a recent disaster. For the latter, document the use of indicators to measure the success of recovery using their actual recovery experiences.	FY 15	Lead: OCM, ORR Support: All NOS Program Offices that support all-hazards
Implement and evaluate community pilot projects to determine effectiveness of criteria and applicability on a broader regional or national scale.	FY16-FY18	Lead: OCM, ORR Support: All NOS Program Offices that support all-hazards

STRATEGY [Lead: OCM]

R2.2 Enhance capacity at the community level to understand and effectively communicate and address risks associated with coastal hazards.

ACTIONS	TIMELINE	NOS PROGRAMS
Acquire and integrate socio-economic information with physical and biological information to improve assessment of risk and vulnerability for planning and decision-making.	FY 14-16	Lead: OCM Support: All NOS Program Offices that support all-hazards
Develop training and other tools to advance the application of risk communication methods at the community level. Utilize networks of partners to ensure the effectiveness of this effort.	FY 14-16	Lead: OCM Support: ORR, NCCOS, ONMS, CO-OPS, IOOS
Provide training and evaluate tools for risk communication utilizing the NOS and NOAA network of places and partners (ONMS, NERRS, Coastal Zone Management (CZM), DRC, Sea Grant, Cooperative Institutes, IOOS Regional Associations, Regional Integrated Sciences and Assessments).	FY 15-18	Lead: OCM Support: NCCOS, ONMS, ORR, IOOS

OUTCOME

R3 Coastal communities utilize natural and nature-based infrastructure to enhance resilience to coastal hazards.

STRATEGY [Lead: OCM]

R.3.1 Improve community understanding of the benefits of natural and nature-based infrastructure, and support implementation as a complement to or in place of built infrastructure, to enhance resilience to coastal hazards.

ACTIONS	TIMELINE	NOS PROGRAMS
Define NOS role in advancing the use of natural and nature-based infrastructure to improve hazards resilience and build upon connections with key intra- and inter-agency efforts, such as the Hurricane Sandy Rebuilding Strategy; the Systems Approach to Geomorphic Engineering (SAGE) community of practice; Regional Integrated Sciences and Assessments program; and the U.S. Army Corps of Engineers (USACE) North Atlantic Coast Comprehensive Study.	FY 14-15	Lead: OCM Support: NCCOS, ONMS, ORR
Conduct a high level review of available information on the benefits and limitations of natural and nature-based infrastructure in protecting against coastal hazards, to increase awareness and understanding of current research and practices.	FY 14	Lead: OCM Support: NCCOS
Implement Hurricane Sandy Rebuilding Strategy Recommendations 19-22, that focus on how the federal government can ensure that green infrastructure is a component of Sandy recovery efforts. Compile and disseminate results of these activities.	FY 14-17	Lead: OCM Support: NCCOS
Enhance science and develop training, tools and products that will assist practitioners at the regional, state and community levels to understand and apply natural and nature-based infrastructure to enhance resilience.	FY 15-17	Lead: OCM, NCCOS Support: ORR, ONMS
Evaluate and communicate results to influence the application of natural and nature-based infrastructure.	FY16-18	Lead: OCM, NCCOS Support: ORR, ONMS

COASTAL INTELLIGENCE

Decision makers in coastal communities need actionable information to make informed choices for the safety of coastal residents, environmental protection, and economic decisions. Coastal intelligence is the source for this information.

Coastal intelligence includes observations (physical, chemical and biological), measurements, models, monitoring, assessment, analysis, and the forecasts, tools, products, and services that derive from these valuable foundational geospatial data. Coastal intelligence provides timely, actionable information, developed from reliable and authoritative science to provide insight into present and future conditions in the coastal zone.

People in the maritime community rely on coastal intelligence for a range of decisions, from how much cargo to load to choosing the most efficient and safest route between two points. They use coastal intelligence to plan seasonally for ship schedules, mitigate the long-term impacts of sea level rise on port infrastructure, and service global trade more efficiently as significantly larger vessels transit through U.S. ports as a result of the Panama Canal expansion. As our economic dependence on the U.S. Maritime Transportation System (MTS) grows, robust coastal intelligence is vital to maintaining MTS resilience, reducing maritime risk and responding to incidents when they occur.

Coastal intelligence is just as important for coastal populations and community resilience. As the population density along our coasts increases, pressures on these ecologically sensitive and economically important areas also increase. For example, ecological forecasts provide the public with key information to make important decisions to protect the health and well-being of a particular coastal area. Moreover, onshore, nearshore and offshore development proposals demand attention and understanding of their options, trade-offs and impacts. NOS's coastal intelligence capabilities help communities make informed decisions about sustainable use of the environment and how future choices, climate change, and coastal development will impact them.

OUTCOME

CI1 Meet the need for expanded commerce in busy ports through enhanced and integrated decision support tools.

STRATEGY *[Lead: OCS, IOOS]*

CI1.1 Maximize access to highly trafficked and increasingly space-constrained ports by providing ship managers with up-to-the minute information to maintain reliable safety margins.

ACTIONS	TIMELINE	NOS PROGRAMS
Focus initially on the port of Los Angeles/Long Beach to better understand the decisions that mariners are trying to make (such as managing underkeel clearance), how they are currently accessing NOAA navigation and positioning information, and if it meets their needs. Use the information gathered to define "deliverable(s)."	FY14-15	Lead: OCS, IOOS Support: CO-OPS, NGS, OCM.
Explore with partners, including private sector service providers, better ways to deliver integrated NOAA navigation and positioning data to user systems of choice.	FY14-15	Lead: OCS Support: CO-OPS, NGS, IOOS, OCM
Develop (or co-develop) integrated products or new data delivery method(s) that meet customer requirements.	FY15	Lead: OCS Support: CO-OPS, NGS, IOOS, OCM
Provide training to users, solicit feedback on satisfaction of use for the purpose intended, and improve products as needed. Consider repeating the process in other ports positioning themselves for post-Panamax expansion.	FY15-16	Lead: OCS Support: CO-OPS, NGS, IOOS, OCM

OUTCOME

CI2 Coastal communities will use a decision support system for local to regional predictions of total water level and its impacts in three to five geographies.

STRATEGY [Lead: CO-OPS, NGS]

CI2.1 Improve the ease with which coastal communities use information about total water level and its impacts to make decisions.

ACTIONS	TIMELINE	NOS PROGRAMS
Establish "Coastal Inundation Benchmarks" in 3-5 communities and associated tool kit to apply the protocols in additional communities: Train community leaders and members on using the tool kit as a means of translating storm surge forecasts to water level impacts on their community.	FY14-17	Lead: CO-OPS Support: NGS, IOOS, OCM
Improve predictions of total water level: Provide and consider regional topography and bathymetry data, geodetic data, and regional scale models and expertise in order to improve predictions of total water level and its impacts. Leverage on-going team efforts on Storm Surge Roadmap and VDatum improvements.	FY14-17	Lead: NGS, OCS Support: IOOS, CO-OPS, OCM
Develop new products and improve existing ones to more effectively communicate the impacts of inundation: new products will address unique regional inundation issues. Visualization of total water impacts will be improved in <i>Quicklook</i> by integrating National Weather Service (NWS) storm surge guidance or products. Collaborations with NWS on graphics, terminology and media partnerships will result in more effectively conveying above ground level flooding.	FY14-16	Lead: CO-OPS Support: OCS, IOOS, OCM

OUTCOME

CI3 Local communities use warnings of ecological hazards to take actions which manage natural resources and protect human health.

STRATEGY [Lead: CO-OPS, NCCOS]

CI3.1 Strengthen underlying data ingestion, detection and observation capabilities, and transition experimental ecological forecasts to operations.

ACTIONS	TIMELINE	NOS PROGRAMS
Identify and engage with appropriate decision makers to determine their requirements for providing the HAB and pathogens forecasts. Engage partnerships to establish and implement risk communication frameworks associated with HAB and pathogens impacts.	FY 15	Lead: CO-OPS Support: OCM, NCCOS, IOOS
Issue and continuously improve operational ecological forecasts while planning for transition of demonstration forecasts including hydrodynamic model requirements and supporting expansion to additional regions.	FY14	Lead: CO-OPS, NCCOS Support: OCS, NGS, IOOS

Develop a standardized and modular data integration framework for analysis, production, and dissemination of HAB and pathogens forecasts on a national scale.	FY16	Lead: CO-OPS, NCCOS
Improve forecast resolution by implementation of better observations through: (1) rapid detection and reporting of key species and toxins in the field and (2) ready access to high resolution satellite data.	FY16	Lead: NCCOS Support: CO-OPS, IOOS, NGS

PLACE-BASED CONSERVATION

America's coastal and marine environments are under increasing pressure from a number of stressors and demands. NOS's place-based conservation efforts have been effective in helping to reduce stress on marine ecosystems while providing economic benefits to coastal communities. Coastal and marine places are tangible, much like a city park or natural resource district, providing a focal point for decision makers and citizens alike. This kind of conservation includes protecting special places⁶ and enables a comprehensive approach to problem solving—balancing the often competing and occasionally conflicting demands of coastal resource use, economic development, and conservation.

Place-based conservation is by its very nature a grassroots democratic approach to improving the lives of Americans. Being "place-based" means that programs are developed by communities for communities' benefits. Although NOS' place-based programs are national in scope and leverage national assets and attention; they are implemented by NOS staff and partners in the places where people live: from Maine to American Samoa. Place-based programs value the experiences of local and indigenous populations and help provide services that combine their traditional knowledge with modern technologies and techniques.

Conserving the values of coastal and marine places takes time, dedication, and persistence. These strategies will help build on significant recent achievements in place-based conservation and will help continue ongoing efforts. To be fully successful, however, place-based conservation strategies will require contributions from all NOS programs. Coastal intelligence strategies will help NOS' places by providing for safer maritime commerce. Building and enhancing coastal communities' ability to prepare for, respond to, and recover from disasters will similarly pay huge dividends for place-based conservation by reducing the impacts of these events on natural systems, coastal economies, and our maritime heritage.

OUTCOME

PB1 Ensure that special places are valued, protected, and preserved in multi-use planning and decision making.

STRATEGY [Lead: ONMS]

PB1.1 Increase protection in up to five special places by expanding protection at current sites and adding protections at new sites.

ACTIONS	TIMELINE	NOS PROGRAMS
Select up to five areas to increase protection of natural or cultural resources. This could include enhanced protection in existing special places (e.g., boundary modification or new regulations) or the designation of new special places. The selection should be informed by: the sanctuary nomination process; the biogeographic representation of national estuarine research reserves; state Coastal and Estuarine Land Conservation Program (CELCP) plans; NERRS watershed plans; or Habitat Blueprint focus areas.	FY14	Lead: ONMS Support: OCM, NCCOS
Provide risk information and assessment tools to support selection and protection of the identified special places where.	FY15-16	Lead: NCCOS Support: OCM, ORR, ONMS
Develop and disseminate all-hazards planning and risk communication strategies for the selected areas, to increase the understanding of the associated communities' vulnerabilities to natural and man-made hazards, and options for adaptation.	FY 15-16	Lead: ORR Support: OCM, ONMS
Characterize and assess ecosystem condition and trends to understand, manage, and protect identified special places.	FY 15-19	Lead: NCCOS Support: ONMS
Provide information to decision makers and authorities responsible for the place-based designation and management of the areas identified.	FY15-19	Lead: OCM, ONMS

STRATEGY [Lead: OCM]

PB1.2 Use Ecosystems Services Valuation⁷ studies to assess and articulate the values that coastal communities derive from NOS special places; and develop capacity and understanding of the application of ESV results in place-based resource management and decision making.

ACTIONS	TIMELINE	NOS PROGRAMS
Identify select special places to use ecosystems services valuation studies by assessing current efforts and policy drivers as well as applicability to other NOS Priorities.	FY 14-15	Lead: OCM, ONMS Support: ORR
Leverage current agency activity by engaging the NOAA Ecosystems Services Valuation Team around select special places to better understand their value, and how these values may change over time and how they support policy and decision making.	FY 15-16	Lead: OCM Support: ONMS, NCCOS, NOS HQ

Using available results from valuation studies, develop and implement targeted educational programming designed to enhance coastal and ocean stewardship as well as enable/build capacity in decision-maker communities to utilize data to inform and advocate for increased protection.

FY 15-16

Lead: ONMS
Support: OCM

OUTCOME

PB2 Increase management capacity to ensure protection in NOS special places and sustain the socio-economic benefits to their communities.

STRATEGY [Lead: NCCOS, ONMS]

PB2.1 Develop improved information and assessment tools and methods to better address threats and impacts from changing use patterns and climate change in NOS special places.

ACTIONS	TIMELINE	NOS PROGRAMS
Identify and prioritize the critical problems confronting NOS special places and the related information and science needs.	FY 15	Lead: ONMS Support: NCCOS, OCM, ORR, OCS, CO-OPS
Develop and test new integrated tools and information to support decision making on critical problems confronting managers of NOS special places.	FY16-17	Lead: ONMS Support: NCCOS, OCM, ORR, OCS, CO-OPS, IOOS
Develop criteria for the application and evaluation of unmanned technologies use, in the management of NOS special place(s). Determine and actively market how these places can serve as a hub for testing unmanned technologies.	FY15-17	Lead: ONMS Support: OCM, NCCOS, IOOS, OCS
Develop, demonstrate, and evaluate “user” interfaces to integrate existing observations, data streams and models for assessment and management applications in a target special place.	FY 16-17	Lead: NCCOS Support: ONMS, OCS, CO-OPS

APPENDIX 1: DEFINITIONS

¹**All-hazards**

Any incident or event, natural or man-made, which requires an organized response in order to protect human life, environment, and property as well as to minimize any disruption of government, social, and/or economic services. For NOS this is limited to those activities that are directly within our scientific expertise, authorities, and fall within the scope of NOS priorities.

²**Communities**

In the context of the NOS roadmap, the predominant meaning will be a coastal community: towns, cities, and counties that are on the coast and rely (at least in part) on the coastal and marine environment for its welfare. However, depending on the context and where appropriate, community may refer to a collection of individuals with similar interests, such as the “marine heritage community” or “community of coastal natural resource managers.”

³**Major Incident/Event**

A major incident includes all characteristics of a significant incident, with maximum staffing and reporting, and a regional or national impact with substantial interest from the public, Congress and media. In the NOAA All-Hazards Concept of Operations (CONOPS), this would correspond to a Level 1 incident.

⁴**Resilience**

The ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events.

⁵**Significant Incident/Event**

A significant incident requires a substantial surge in operations relative to the norm. This type of incident is characterized by multiple Line Office engagement, and regional or national impact. In the NOAA All-Hazards Concept of Operations (CONOPS), this would correspond to a Level 2 incident.

⁶**Special places**

In the context of the NOS Roadmap, special places are those marine areas that are designated, reserved or in some way set aside for particular use(s), including conservation, and are managed by NOAA or long term NOAA partners (states and territories). Examples include, but are not limited to, National Marine Sanctuaries, National Estuarine Research Reserves, and protected areas managed by State partners.

⁷**Valuation**



The act or process of assigning market or non-market relative worth, utility or importance to special places, ecosystem services and functions.

APPENDIX 2: ACRONYMS

CELCP	Coastal and Estuarine Land Conservation Program
CONOPS	Concept of Operations
CO-OPS	Center for Operational Oceanographic Products and Services
CZM	Coastal Zone Management
DHS	Department of Homeland Security
DRC	NOAA's Gulf of Mexico Disaster Response Center
FEMA	Federal Emergency Management Agency
HAB	Harmful Algal Bloom
HSPO	NOAA Homeland Security Program Office
IOOS®	NOAA Integrated Ocean Observing System Program
MTS	Marine Transportation System
NCCOS	National Centers for Coastal Ocean Science
NERRS	National Estuarine Research Reserve System
NGS	National Geodetic Survey
NIST	National Institute of Standards and Technology
NOS	National Ocean Service
NOS HQ	National Ocean Service Headquarters
NWS	National Weather Service
OCM	Office for Coastal Management (NOAA Coastal Services Center and the Office of Ocean and Coastal Resource Management will be coordinating activities related to the NOS Roadmap as if they are a single office.)
OCS	Office of Coast Survey
ONMS	Office of National Marine Sanctuaries
ORR	Office of Response and Restoration
USGS	United States Geological Survey
USACE	U.S. Army Corps of Engineers

APPENDIX 3: LEAD AND SUPPORTING ROLES BY STRATEGY

	OCS	CO-OPS	NGS	IOOS®	OCM	OR&R	NCCOS	ONMS	NOS HQ
Outcome R1									
Strategy R1.1									
Strategy R1.2									
Outcome R2									
Strategy R2.1									
Strategy R2.2									
Outcome R3									
Strategy R3.1									
Outcome CI1									
Strategy CI1.1									
Outcome CI2									
Strategy CI2.1									
Outcome CI3									
Strategy CI3.1									
Outcome PB1									
Strategy PB1.1									
Strategy PB1.2									
Outcome PB2									
Strategy PB2.1									

 lead role
 supporting role